Human ecology and environmental policies: prospects for politics and planning

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Editorial comment
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The term ecology was formulated and applied by Haeckel during the late 19th century to refer to the interrelations between organisms and their immediate environment. General ecology specifically refers to the interrelations between animals and plants and their immediate environment, whereas human ecology focuses on people. Given that human products and processes are pertinent for human ecology, all policies and practices related to the use of natural resources become an important subject of study. The values and uses of land are one substantial and essential component of this vast area of enquiry. Consequently, political geography can provide important cues for research in this field. Indeed, we follow the approach adopted by Ratzel, a student of Haeckel, who not only interpreted land as a basic resource of human life, but also understood and stressed its political stake. Ratzel already accounted for the interrelations between populations, land and resources.

This commentary will briefly describe and illustrate the pertinence of human ecology (as we define it) as a conceptual framework that enables academics and practitioners from both the physical sciences (e.g. biologists, chemists, geologists and geographers) and the human sciences (e.g. anthropologists, demographers, economists, geographers, politicians and sociologists) to reconcile divergent disciplinary concepts, and research methods. This commentary will indicate that if principles from general ecology and human ecology are used in an integrative perspective in order to redefine current interpretations of the environment, then political geographers can comprehend the political dimensions of environmental policies at both national and international levels.

Ecology is a word à la mode. Although it has been used increasingly by physical and human scientists since the mid nineteenth century, it has also acquired a political connotation during recent decades. Government officials and political activists in many European countries have gradually adopted ‘the green movement’ in the wake of publications about environmental nuisances. This interpretation of ecology commonly advocates conservation and preservation policies in relation to specific sites, even though studies are rarely undertaken to establish whether such policies serve both the short- and long-term interests of human society. Such policies are misleading if they are not related to the broader geographical and societal context—the human ecosystem—in which they are located.

Cues for this kind of approach are found in the seminal contributions of authors such as Gregory Bateson, the Club of Rome, and N. Georgescu-Roegen, amongst others. Collectively, these authors challenged societal value-systems, the economic framework, and contemporary technologies applied in many countries with either socialist or market economies. They questioned economic growth, the spread of environmental pollution, and applied scientific specialization, particularly in the workplace. In contrast to many contemporary political activists, they did not advocate conservation and preservation per se, but promoted sustainable policies and practices, including ‘intermediate technologies’, small units of production, and communal ownership of land and other resources.
These seminal contributions ought to be re-examined in order to bypass the current hiatus, largely created by conservationists and politicians from opposing political parties. We suggest that the prospects for a renewed dialogue related to environmental policies and planning practices are encouraging, if principles from general ecology and human ecology are used in an integrative approach. This kind of approach is not new because it was advocated and illustrated by Hippocrates in his treatise *On Airs, Waters, and Places*, which discusses human health and well-being. From a political perspective, Ratzel formulated an integrative, ecological perspective on land, which he considered to contain the basic resources of life. His interpretation of precise territories in terms of all their constituents or ingredients has rarely been integrated into contemporary geographical discourses and theories. Yet, Ratzel understood the complexity of land, including its ecological and political dimensions.

The integrative approach advocated here can lead to the formulation of regulatory principles that interrelate the impacts of rates of economic growth to the rates of use and destruction of non-renewable resources. For example, it is instructive to re-examine the physiological principles of *homeostasis* (e.g. the maintenance of metabolic equilibrium within an animal by a tendency to compensate for disruptive change) and to reapply these principles in order to establish if social mechanisms (for example, land-use planning regulations) can protect human populations against degeneration or destruction. Similarly, the principles of *allometry* (e.g. the study of the differential growth-rates of parts of an organism in relation to the whole organism) can be re-applied to establish the costs and benefits of alternative policies and practices, based on diverse scenarios and strategies. For example, what is the optimum size of a city or a region? Just how this is possible warrants further consideration after the definition of human ecology has been presented.

*Human ecology* is a holistic, integrative interpretation of those processes, products, orders and mediating factors that regulate natural and human ecosystems at all scales of the earth's surface and atmosphere. It implies a systemic framework for the analysis and comprehension of three logics and the inter-relations between their constituents using a temporal perspective. These three logics are:

1. a bio-logic, or the orders of biological organisms;
2. an eco-logic, or the orders of inorganic constituents (e.g. water, air, soil and sun);
3. a human-logic, or the ordering of cultural, societal and individual human factors.

It is suggested that this macro-system of three logics regulates the world. Consequently, it is inappropriate to emphasize one set of constituents to the detriment of others. Moreover, it is erroneous to distinguish between the 'physical' and the 'social' constituents of environments. This definition implies that a contextual integrative approach is pertinent. This kind of approach would examine specific situations in terms of the reciprocal relations between the three logics, both at one point in time, and over an extended period of time, using integrative principles such as those of homeostasis and allometry.

This interpretation challenges the 'man-environment paradigm', which has consistently been used since antiquity to distinguish human beings from their 'natural habitat', and to claim that the transformation of the material constituents of that habitat by people is an 'underlying force' that has guided human history. This point of view creates a dualism between people and their habitat which authors like Hippocrates have refuted. Such chasms are bridged if it is accepted that it is misleading to study the inorganic, biological or human constituents of the environment, because they are mutually defined by, and defining components of, one ecosystem in which people are but one constituent. Human attitudes,
motives and values influence what people perceive and construe, how they use precise settings, and how they modify them over time. Moreover, the location, composition and organization of a setting has some bearing on how it is perceived and used. In sum, it is not 'the people' or 'the environment' which should be given priority, or become the methodological unit of study. Rather, the interrelations between the three logics presented above should be examined over an extended period of time in the context in which they occur.

The preceding principles can be illustrated by referring to a range of studies showing how resources have been valued and used in diverse societies during the course of human history. Such studies show, for example, that the alarming case of deforestation in the Amazonian region of Brazil may seem to be of recent origin, yet it is noteworthy that deforestation also occurred in Britain, and many countries around the Mediterranean Sea, several centuries ago. It is instructive, and necessary, to place such processes in their context, to try to understand why they occurred, and to establish the intended and unintended consequences that followed. Although we cannot table replies to these problems herein, it is noteworthy that Boyden et al. (1981) have examined these kinds of issues in their longitudinal study of the development of Hong Kong prior to the establishment of the British Crown Colony and until the last decade. For example, a comparison is made of traditional Chinese, and contemporary international methods of food production—cultivation, harvesting and storage—as well as food processing and packaging prior to consumption. The consequences of the change from one set of processes to the other include impacts on agricultural productivity, the use of energy, the accumulation of toxic and non-toxic waste products, the import and export of materials, and the diet and health of the local population. This study raises many other questions concerning the costs and benefits of industrialized food production and renewable resources. For example, the toxicity of fertilizers that are intended to increase the annual harvest has negative long-term effects on the harvest, the condition of the soil, and the equilibrium of the ecosystem; moreover, the destruction of 25000sqkm of forest by Japanese industries in south-east Asia may have short-term benefits but why ignore the long-term negative effects? In other terms, what regulatory principles indicate the limits of agricultural and forestry production in this context, given that unlimited growth over an extended period of time is not feasible and may be destructive?

In essence, studies of the kind undertaken by Boyden et al (1981) can identify both the intended and the unintended consequences of human products and processes on the three logics of the ecosystem. The interrelations between the various consequences of human products and processes, such as food production and consumption, the use of energy, the accumulation of waste products, and the diet and health of the population, are frequently overlooked by contemporary politicians and planners whether they are concerned with agricultural productivity, or other land uses. From this perspective, it is necessary to distinguish between the tacit know-how (in which theory and practice are interrelated) used by populations in so-called 'undeveloped countries' to regulate human activities, and the explicit know-how (in which theory and practice are also interrelated, yet clearly distinguishable) applied by decision-makers in so-called 'developed countries'. In the case of Hong Kong, the ancient Chinese civilization corresponds to the former type of society, whereas the British colonial administration can be equated with the latter. In respect to the former, societal instruments of regulation are implicit and self-regulatory, whereas in the case of the latter they are explicit and authoritatively imposed. Moreover, whereas implicit regulatory knowledge is both conditionally and contextually defined, and usually transmitted by social customs, norms and rules, explicit instruments of regulation are usually absolute, fixed and prescribed by written deeds and codes of conduct. The suppression of implicit instruments of regulation and the growth of explicit ones can be allied with long-term processes of urbaniza-
tion, like those of Hong Kong. Clearly, more regulatory knowledge is required by people in contemporary societies in order to formulate environmental policies and apply them.

We can extend the preceding examples to refer to present-day decisions concerning the location and construction of new residential or industrial buildings, or the protection of sites. Such decisions are usually related to readily quantifiable data concerning a specific project: to the owner of a power station for example, the purchase price of alternative sites, the availability and cost of site services, infrastructure, transport, the availability and cost of energy suppliers, are all important. To those persons employed in the power station, it is the locations of residence and employment, and access to community services and facilities as well as the attractiveness of the neighbourhood, that are important. Neither the owner, nor the workers are responsible for, or fully aware of, the external costs generated by their respective decisions.

Although the new installation will benefit the local community by providing employment, the production processes it accommodates may create non-toxic and toxic wastes that cannot be eliminated, but pollute the air and/or subterranean soil, thus generating direct harmful effects. As a result, there may be short- and long-term effects that are harmful for the health and wellbeing of the workers and the local community. In the same vein, each of the employees (like all motorized commuters) will pollute the air, use non-renewable fossil fuels, and contribute to ambient noise levels while travelling between home and work. In essence, what may seem to be rational for the owner or employee may not serve the best interests of the local community, or its environmental conditions, and the larger ecosystems in which they are located.

This example illustrates that the calculation and the monitoring of costs and benefits is a fundamental, controversial and complex task that should be assumed by government, rather than the individuals or groups who may have vested interests in specific decisions concerning sites. For these reasons, human ecology is becoming an instrument for political decision-making. Many professional groups, including town and country planners, should become aware of the stake involved with specific proposals for the development of sites and regions. The vested interests of client corporations, private institutions and individuals, as well as those of local community groups, ought to be borne in mind when formulating land-use policies of any kind, or assessing specific proposals. The costs and benefits of alternative projects ought to be calculated prior to decisions being taken. Nonetheless, today, few public or private institutions are examining the costs and benefits of alternative land uses for specific sites, either with respect to the local community or the larger ecosystem in which that community exists. In this respect, many of the studies known as environmental-impact assessment are too restrictive if they examine only one proposal and do not evaluate its impact on the ecosystem. Rather, informed decisions can be made when the costs and benefits of alternative projects are tabled and compared. Unfortunately, this kind of approach was not implemented in Britain from 1947 despite the enactment and application of the Town and Country Planning Act, the subsequent reclassification of land uses, and then the construction of vast numbers of public- and private-rental housing units in cities. Studies in other European countries have also established similar shortcomings. The legacy for current and future generations is a grim one, yet government officials, academic and professional architects and town planners heralded the creation of 'model environments' (Ravetz, 1980).

This commentary suggests that it is necessary to redefine and reconceptualize environmental policies if an integrative conceptual framework is to be formulated and applied by planners and politicians. We suggest that human ecology can aid in achieving that goal. First, it is necessary to enlarge the definition of environment in order to account for the
biotic and inorganic constituents of human habitats. Second, it is necessary to examine the impacts of human processes and products on these constituents of the environment that exist at all scales of the earth’s surface and its biosphere. Third, it is necessary to consider both implicit and explicit instruments of regulation, which are fundamental constituents of the human logic that account for the way people value and use resources. Finally, the costs and benefits of projects, and the monitoring of extant situations should include the study of energy flow, including the production and consumption of energy in relation to entropic laws of the planetary ecosystem, the use of non-renewable resources, and the production, treatment and disposal of toxic and non-toxic wastes and bi-products.

In sum, if human ecology is to assert itself as an integrative perspective (rather than being a multi-disciplinary field), then there ought to be an integrative framework. This commentary has presented and illustrated a tripartite framework that enables us to examine the impact of human processes and products on the inorganic and biological constituents of the environment, as well as the reciprocal relations between these impacts and human processes and products. This perspective can generate a coherent body of knowledge by identifying those operant principles that ought to be accounted for in a precise situation, at a specific point in time, as well as in larger areas over a relatively long period of time. These principles can identify and measure the orders, the conditions, the costs and the benefits that enable human populations, their immediate surroundings, and the ecosystem that supports them to remain sustainable. Such an approach is far removed from preservation and conservation, as well as uncontrolled development. In contrast to such dogmatic policies we suggest that the human-ecology perspective can provide a coherent body of knowledge that public administrators, politicians, the planning professions and lay people can discuss together in order to formulate and implement policies that encourage sustainable conditions at all geographical scales from individual dwelling units, to neighbourhoods, cities and the earth’s ecosystem. From this perspective political geography and geopolitics should become eco-politics.

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References


